BUILD UP
energy solutions
for better buildings

OVERVIEW

Keeping Cool:
Developments in Solar Control

Solar shading: a natural, passive cooling method necessary for nearly zero-energy buildings.

The Recast EPBD requirement for nearly zero-energy buildings is a challenge for building designers. Fortunately, recent developments in solar control show the way to achieving passive cooling – and heating – and reducing the overall energy consumption of buildings. **Energy efficiency is an ideal strategy for recessionary times**, and it is vital to keep in mind that the 20-20-20 targets are about improving competitiveness, reducing the cost of energy, and creating jobs in the green economy – all cures for our economic woes.

While the building sector has been described as 'critically fragmented and has significant inertia to change', **change is underway and visible** in many areas. To achieve nearly zero-energy buildings, every source of energy saving must be tapped. So far, the potential contribution from solar shading has been underestimated, despite the widely recognised fact that **avoiding overheating reduces cooling demand**.

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Undoubtedly, much of the work starts at design stage – and in many cases, designers are not yet giving sufficient consideration to the avoidance of overheating in the design process. **BUILD UP has a wealth of resources on this subject** – a starting point is the question, what does the EPBD stipulate for summer comfort and how does this affect energy use and building design? A good overview can be found at Solar shading for low energy buildings. Next step – why not join the ventilative cooling community, and check out the results of projects such as KeepCool and this ITRS study. An inspirational example is the use of solar shading in the design of this energy efficient building complex in Slovenia.

Some of the most significant innovations in the solar shading technology are coming **from the automation and controls side**. Making sure the solar shading system works properly when it is needed, independently of human presence – or the occupant's individual preference – is a great step forward in the quest for efficiency. Studies like ESCORP-EU25 or ASIEPI have shown unambiguously that solar shading, when properly automated, can shave double-digit percentages off the cooling bill, depending on the location and orientation of the building and its glazed surfaces. So, what's new in this area?

Motors and controls for highest efficiency

The solar control industry is offering solutions which combine the assurance of user comfort, optimum energy efficiency and security of operation. Research projects have shown clear benefits of various types of shading and night cooling by vent windows. Motorized external solar control products, like **outside venetian blinds**, **roller blinds** or **various types of awnings**, now show these features:

- **Security management** to protect the solar control system against storm or heavy wind, sometimes against rain, snow or frost, if required.
- **User comfort functions** such as individual or group control of blinds, controlling blinds per zone or façade and window cleaner blocking facilities. Commanding multiple blinds at the same time does not interfere with controlling individual blinds separately.
- **Energy management**: building façades are like a membrane between two distinct worlds. On the outside weather conditions change with the seasons and often during the day, while on the inside the occupants' comfort needs vary according to their activities. Solar control helps manage the energy consumption by lowering the cooling demand - as well as the need for artificial lighting. The cooling demand is reduced by preventing overheating in summer conditions through proper use of automatic controls. But by smartly letting the sun in the building in sunny winter conditions, the solar control system can also make a contribution to energy savings on heating. A cooperative effort between the solar shading and the HVAC industries has resulted in a publication that shows the energy savings from shading systems.
- Finally, automation allows **natural light management** by balancing the need for artificial lighting with the available natural daylight. In this area, interior solar control systems (blinds and venetians) have a better effect than exterior systems.

Dynamic façades

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State-of-the-art automation results in a dynamic façade, **adapting the degree of solar control** to the continuously varying outside weather conditions, **while maintaining a proper level of comfort** (with regard to both temperature and light) for the building occupants. Dynamic façades contribute to energy savings and will be a welcome component of buildings that we need to design for nearly zero-energy buildings.

+ Join this community

Join the BUILD UP Community Solar shading today.

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